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BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314

EXAMINER	
COOLEY, CHARLES E	
ART UNIT	**PAPER NUMBER**
1723	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/633,599	BREITHAUPT, HARTMUT
	Examiner	Art Unit
	Charles E. Cooley	1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) *1-9,17,18,20,21,23,24,26,27,29,30,32 and 33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-16,19,22,25 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-33* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03152006*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

FINAL OFFICE ACTION

Election/Restriction & Election By Original Presentation

1. Newly submitted claims 17, 18, 20, 21, 23, 24, 26, 27, 29, 30, 32, and 33 are directed to an invention/species that is independent or distinct from the invention originally claimed for the following reasons:

Claims 17, 18, 20, 21, 23, 24, 26, 27, 29, 30, 32, and 33 are drawn to a patentably distinct variants/embodiments of the claimed invention (as clearly established by pages 3-5 of the instant specification) now added after a first action on the merits. If such subject matter drawn to these variants/embodiments were presented in the originally filed and elected process claims, the application may have been further subject to an election of species requirement. Furthermore, since all generic claims stand rejected in this final rejection, Applicant is not entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 17, 18, 20, 21, 23, 24, 26, 27, 29, 30, 32, and 33 are withdrawn from consideration as being directed to non-elected variants/embodiments. See 37 CFR 1.142(b) and MPEP § 821.03.

Furthermore, it is unclear if the specification is explicitly enabling with regard to the claimed process for the subject matter of these withdrawn claims. Note these claims

are drawn to variants/embodiments "of the apparatus" according to pages 3-5 of the instant specification.

2. This application contains claims 1-9, 17, 18, 20, 21, 23, 24, 26, 27, 29, 30, 32, and 33 drawn to a nonelected invention/species. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119, which papers have been placed of record in the file.

Information Disclosure Statement

4. Note the attached PTO-1449 form submitted with the Information Disclosure Statement filed 15 MAR 2006.

Specification

5. The disclosure is objected to because of the following informalities:

a. Several words of the specification are missing text, perhaps due to a printing error. For example, see page 1 (the title); page 2, last line; page 3, last line; page 5, first and last lines; page 7, first line; page 9, last two lines; page 12, penultimate line. This list is not all-inclusive.

Appropriate correction is required.

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed (MPEP 606.01).

Claim Objections

7. Claims 6-9 are (withdrawn/currently amended) rather than (currently amended).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 10, 16, 19, 22, 25, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by MOSS (US 3,877,682).

The patent to MOSS discloses a mixing process including for producing a fluid mixture of predeterminable mass and/or predeterminable volume by mixing a first fluid (one of A, B, or C), held in a first fluid line (one of 11, 15; 12, 16; or 13, 17), and a second fluid (another of A, B, or C), held in a second fluid line (another of 11, 15; 12, 16; or 13, 17); the process comprising the steps of causing the first fluid to flow into a third fluid line (denoted by line 14D, 19), which is at least intermittently connected to the first fluid line; and causing the second fluid to flow into the third fluid line 14D, 19, which is also at least intermittently connected to the second fluid line, said steps of causing the first and second fluids to flow into the third fluid line being performed alternately and

repeated several times; the first and second fluids being joined to form a mixture conducted in the third line 14D, 19; line 14D, 19 forming a junction (i.e., multiple inlets for fluids being fed into a sole output line 14D, 19).

More specifically and for comprehensiveness, the patent to MOSS discloses an automatic measuring and mixing machine adapted to measure and dispense predetermined quantities of two or more components to form a solution thereof. While the invention is particularly useful in preparing ready-to-use solutions of replenisher for automatic film processors, it will be recognized that the machine is applicable to many other types of chemical processes requiring automatic measurement and mixing of solutions. The machine monitors the level of solution in a holding tank containing the solution, and when the level falls below a predetermined point, automatically initiates a new operating cycle wherein measured amounts of the constituents are dispensed into the mixing tank to produce a fresh supply of the solution. Alternatively, the level monitor may be arranged to produce a signal, causing an operator to initiate a new cycle.

The constituents of the solution are not intermixed until a solution demand is registered, and that no more solution is prepared than is necessary for a relatively brief period of consumption whereby prolonged oxidation, degradation or loss of strength of the solution is minimized. And while only a relatively small quantity of solution is prepared at any one time, at no time does the system run out of prepared solution, so that when used in conjunction with an automatic processor or a group thereof, there is never an interruption in the supply. The volumetric amounts of chemicals dispensed are those exactly required for a developer solution in their proper ratios, thereby producing

a solution having optimum characteristics. Another important advantage of the invention is that the machine may be programmed to provide any desired ratio of the chemical components and the solvent therefor.

The automatic measuring and mixing machine has a measuring chamber. Each chemical unit in the desired ratio of the chemicals being mixed is constituted by a volume equal to the effective full capacity of the measuring chamber. The entire contents of the measuring chamber is drained into a mixing tank whose contents are transferred to a holding tank. The chemicals to be intermixed are separately stored and are selectively fed through respective signal-controlled supply valves to the measuring chamber. Control signals for actuating the supply valves are produced by an electronic control system which is responsive to sensors which provide inputs to the control system indicative of the state of the measuring chamber and of the mixing and holding tanks and which is programmed to mix the constituents of the solution in a predetermined sequence.

If therefore the desired ratio by volume is one volume unit of chemical A, three volume units of chemical B and two volume units of chemical C, the control system is programmed to provide an operating cycle in the course of which the measuring chamber is completely filled once by chemical A, three times by chemical B and twice by chemical C, the chamber after each filling being completely drained and emptied into the mixing tank.

Where chemical C is water, the two necessary volume units of water are so dispensed whereby water is fed into the measuring chamber only after chemical A is

supplied thereto to provide a volume unit of water serving to wash out the measuring chamber before chemical B is fed thereto in order to prevent an interaction of chemicals A and B in the measuring chamber. Water is again fed to the measuring chamber to provide the second unit of water after the chamber has served to measure three units of chemical B. Thus upon completion of the cycle, the measuring chamber is purged in readiness for the next operating cycle. In effect, therefore, the measuring chamber acts as a measuring spoon which ladles out as many volume units of the several components as are required for the mixture, and no more.

The chemicals intermixed in the mixing tank are pumped into the holding tank whose output is then available to the user. The holding tank is provided with a low level sensor to produce a start signal when the tank requires a fresh charge of solution, the start signal being applied to the control system to initiate a new cycle.

Referring now to the drawing, there is shown a machine in accordance with the invention, including a storage or holding tank 10 whose capacity is such as to be sufficient to meet the anticipated demand by one or more film processors or other users, thereby minimizing degradation of the solution. For example, assuming that the machine is intended to supply a replenisher solution to four film processors, the tank must be large enough to contain a workable supply of solution for all processors plus a reserve amount which would satisfy the user's demand during the time it takes to make a fresh solution. In practice therefore, the mixing cycle is so timed, the volume measuring unit is so sized and the quantity of reserve in holding tank 10 is made such as to meet the anticipated maximum rate of useage by the processors.

Tank 10 may be provided with a floating ball-type lid to minimize air contact. Similar lid sealing expedients are used with all other tanks in the machine, the tanks being fabricated of stainless steel or suitable plastics which are impervious to the chemicals contained therein.

The solution is produced by intermixing components constituted by chemical A, chemical B and chemical C. Chemicals A and B, which may be in concentrated liquid or flowable powder form, are stored in supply tanks 11 and 12, respectively, or in other suitable sources of supply. The water supply which is chemical C is obtained from a water supply line 13. In practice, the supply tanks for chemicals A and B are sized to hold a commercially packaged cubitainer of the chemical plus a few additional mixing charges.

Chemical A from tank 11 is fed by gravity flow through a signal-controlled valve 15 into a measuring chamber 14 whose full capacity is equal to the base unit of the ratio of the components to be intermixed to produce the desired solution.

Chemical B is supplied by gravity-flow to measuring chamber 14 by way of a signal-controlled valve 16, whereas chemical C which is water is supplied to the same chamber through a signal-controlled valve 17. All valves in the machine may be electromagnetically activated or of any other type which is normally closed and which is caused to open by means of a control signal, the valve remaining open as long as the signal is present.

Measuring chamber 14 drains into a mixing tank 18 through a signal-controlled valve 19. Mixing tank 18 is provided with a transfer and mixing pump 20 which serves

either to pump the chemical components held therein through a signal-controlled mixing valve 21 back into the tank, thereby recirculating and intermixing the components to produce the desired solution, or to pump the solution into holding tank 10 through a signal-controlled transfer valve 22 placed in transfer line 18T.

Thus when pump 20 is operating while transfer valve 22 is closed and mixing valve 21 is open, mixing tank functions in the mixing mode to intermix the components drained therein from the measuring chamber. And when pump 20 is operating while transfer valve 22 is open and mixing valve 21 is closed, then mixing tank functions in the transfer mode to convey the solution therein to holding tank 10.

Disposed in measuring chamber 14 is a sensor 23 adapted to detect the level of chemical component therein and to produce a signal when the chamber is exactly full. This signal is hereafter referred to as a "full" signal in that it indicates that the measuring chamber now contains one volume unit of the component supplied thereto.

A sensor 24 is interposed in the drain line 14D extending between measuring chamber 14 and mixing tank 18 to detect the flow of the component from the chamber to the tank and to produce a signal when the measuring chamber is fully drained, this signal being hereafter referred to as the "empty" signal. Hence when the measuring chamber is filled to capacity, a "full" signal is generated, and when the chamber is fully drained and emptied into the mixing tank, an "empty" signal is generated.

A sensor 25 is disposed in mixing tank 18 to monitor the level of solution therein and to produce a signal when the tank is exhausted, thereby indicating the end of a cycle, this signal being hereinafter referred to as the "end" signal. A sensor 26 is

disposed in holding tank 10 to detect the level of solution therein and to produce a signal when this tank is at a low point where only the reserve is left, the tank being in need of a fresh charge. Since this signal initiates the start of a new cycle to manufacture the fresh charge of solution, it is hereafter referred to as the "start" signal.

In practice, the various level sensors may be of the resistance or conductivity type provided with stainless steel probes which make contact with the tank contents. The nature of the sensors, all of which may be of commercially available types, forms no part of the present invention.

The "full" signal from sensor detector 23, the "empty" signal from sensor 24, the "end" signal from sensor 25 and the "start" signal from sensor 26 are applied as inputs to an electronic control system 27 adapted to produce suitable output control signals in a pre-programmed sequence. These control signals are sequentially applied to valves 15, 16, 17, 19, 21 and 22 and to pump 20, to carry out a full cycle of operation. This cycle is initiated when a "start" signal is received by the control system and is terminated when an "end" signal is received.

The electrical circuit for this purpose may be in solid state form whereby all necessary switching and timing actions responsive to the input signals are carried out by circuits including transistors, diodes or SCR devices. Alternatively, electromagnetic or motor-operated switches may be used to carry out the necessary functions. In either case, the circuit arrangement is such as to respond to the input signals to generate control signals for actuating the valves and the pump in a predetermined sequence

serving to produce a solution in the holding tank having the desired ratio of chemical components.

In practice, the supply tanks for chemicals A and B may be equipped with detectors coupled to an alarm indicator which is activated when the tank supply runs low so that these tanks may be maintained with an adequate supply of chemicals thereby avoiding any interruption in the operation of the machine. A detector-indicator may also be used to indicate water pressure and to provide an indication when water pressure is below a safe level. Sensors may also be used to call attention to the existence of leakage from the supply valves.

Operation of the Machine

To illustrate the operation, we shall assume that the required solution has the following ratio of components:

Chemical A - one unit

Chemical B - two units

Chemical C - two units

Each chemical unit is constituted by a volume equal to the effective full capacity of measuring chamber 14. If therefore this capacity is one liter, then the base unit of the ratio is 1 liter and the desired ratio (1A + 2B + 2C) is 1 liter of chemical A, to 3 liters of chemical B, to 2 liters of chemical C, which in the case of a replenisher solution is water.

We shall further assume that at the outset all valves are closed, pump 20 is inactive and holding tank 10 is filled with replenisher solution. The user then proceeds to draw solution from the tank until a point being reached where the tank is low and only

has a reserve left whose amount depends on the setting of sensor 26. This causes sensor 26 in the holding tank to produce a "start" signal to initiate a new cycle of operation which proceeds while the user continues to draw reserve solution from the tank, this cycle being completed before the reserve solution is exhausted.

The electronic control system 27 responds to the input "start" signal to produce an output control signal which is applied to supply valve 15, the valve opening to admit chemical A from tank 10 into measuring chamber 14. This action continues until measuring chamber 14 is full. This condition is detected by sensor 23 which produces a "full" signal that is applied to control system 27 which responds by cutting off the control signal to supply valve 15 and by applying a control signal to drain valve 19. Thus supply valve 15 closes to shut off the supply of chemical A to the measuring chamber 14 and valve 19 then opens to drain the unit of chemical A contained in the measuring chamber into mixing tank 18.

When the measuring chamber is fully drained as indicated by sensor 24, the resultant "empty" signal which is applied to control system 27 causes the system to cut off the control signal to drain valve 15 and to produce and apply a control signal to water supply valve 17. Hence drain valve 15 is again closed and now valve 17 is open to feed water into measuring chamber 14 until the chamber is full, as indicated by the "full" signal. At this point, water supply valve 17 is cut off and drain valve 19 is then reopened to drain the unit of water from measuring chamber 14 into mixing tank 18. The water in measuring chamber 14 serves to purge the chamber of any residual chemical A.

When measuring chamber 14 is fully drained of water as indicated by the "empty" signal from sensor 24, the drain valve 19 is cut off and a control signal is then applied to supply valve 16 which opens to admit chemical B into the measuring chamber. At this point, since the mixing tank already contains chemical A and water, the control signal acts to activate pump 20 to initiate a mixing action and mixing valve 21 is opened to permit recirculation of the mix.

Supply valve 16 is cut off when the "full" signal is produced by sensor 23 indicating that the chamber is full with chemical B, at which point drain valve 19 is opened to drain the volumetric unit of chemical B into mixing tank 18. When the unit of chemical B is fully drained, as indicated by the "empty" signal, a second unit of chemical B is produced by repeating the operating sequence for chemical B.

When the desired two units of chemical B are dispensed into mixing tank 18, water supply valve 13 is again opened to admit another unit of water into the measuring chamber 14, which unit is then drained into mixing tank 18. This final unit of water serves to purge measuring tank 18 of residual chemical B so that the tank is clean in readiness for the next cycle of operation.

At this stage in the cycle, mixing tank 18 contains one unit of chemical A, two units of chemical B and two units of chemical C (water). With pump 20 operating and mixing valve 21 open, the components A, B and C in the mixing tank are recirculated therein, in the course of which the desired solution is developed. This mixing action continues for a predetermined period sufficient to fully intermingle components A and B with the water (component C). At the end of this mixing period, the control signal applied

to mixing valve 21 is cut off and a control signal is produced which is applied to transfer valve 22.

With pump 20 still operating and transfer valve 22 open, the solution in mixing tank 18 is transferred through line 18T to holding tank 10. When all of the solution from mixing tank 18 has been transferred, an "end" signal is produced by sensor 25 in the mixing tank, this signal being applied to the electronic control system to cut off both pump 20 and transfer valve 22 and to reset the system to its quiescent state in readiness for the next cycle of operation. This next cycle does not take place until the solution in the holding tank 10 is at a predetermined low point, at which point a cycle "start" signal is generated.

It will be appreciated that while the system is described as supplying a solution to a single user, in practice the machine capacity may be sufficient to feed a battery of users which consume the solution in the holding tank. Also while the machine has been described to provide a solution whose ratio is 1A - 2B - 2C, in practice the component ratio may be any desired ratio such as 1A - 1B - 6W - 1A - 1B - 4W or 2A - 2B - 2C. Also, in practice, essentially the same technique may be used for a greater number of components, the machine in all cases being characterized by extremely precise volumetric proportioning, intermixing of the several constituents and storing of the mixed products.

The machine is simple to operate since there is nothing to do but add raw chemicals A and B thereto when the supply thereof is low. The machine is universal for all currently used commercial chemistries and a mixture ratio may be selected

depending on the chemistry in use. Because only a relatively small quantity of chemicals is mixed on demand, the storage of mixed chemicals for a prolonged period is avoided, and deterioration thereof is minimized. Also while a gravity flow system is used to feed the chemicals to the mixing chamber, in practice one may use pumps for this purpose, in which case the control signal which actuates a given supply valve also actuates the associated pump.

10. Claims 10, 16, 19, 22, 25, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by MACKEY (US 5,288,145).

The patent to MACKEY discloses a mixing process including for producing a fluid mixture of predeterminable mass and/or predeterminable volume by mixing a first fluid (one of the additive, water, or concentrate - Fig. 4), held in a first fluid line, and a second fluid (another of the additive, water, or concentrate), held in a second fluid line; the process comprising the steps of causing the first fluid to flow into a third fluid line 11 and/or 25, which is at least intermittently connected to the first fluid line; and causing the second fluid to flow into the third fluid line 11 and/or 25, which is also at least intermittently connected to the second fluid line, said steps of causing the first and second fluids to flow into the third fluid line being performed alternately and repeated several times; the first and second fluids being joined to form a mixture conducted in the third line 11 and/or 25; line 11 and/or 25 forming a junction (i.e., multiple inlets for fluids being fed into a sole output line 11 and/or 25).

More specifically and for comprehensiveness, the patent to MACKEY discloses a programmable mixing/diluting apparatus in which precisely proper weights of constituent materials are automatically introduced into a mixing tank at proper intervals. A mixing apparatus having a programmable controller which automatically operates to cut off the flow of one material to the tank after a predetermined weight of that material has been introduced into the tank, to thereafter initiate the flow of the second material into the tank, and to cut off that flow when a predetermined weight of the second material has been introduced into the tank. The controller also initiates another mixing cycle after a predetermined weight of the previously mixed mixture has been discharged from the mixing tank.

For purposes of illustration, the invention has been shown in the drawings as embodied in apparatus 10 for mixing various materials, one of which is liquid and the other of which is at least partially liquid. Herein, the apparatus is specifically used to mix water with a liquid concentrate having a relatively high solids content in order to dilute the concentrate and produce a liquid slurry having a significantly lower solids content. An appropriate additive may be introduced into the mixture if desired.

More specifically, the mixture produced by the apparatus 10 is used to coat the rubber (e.g., rubber slabs or pellets) used in the manufacture of tires in order to prevent the slabs and pellets from sticking together during storage. In one particular example, the initial concentrate is formed by dumping sacks of powder such as calcium carbonate into water in a large storage tank (not shown) to create a liquid concentrate having a solids content of about 55 percent by weight. Subsequently, the concentrate is mixed

with additional water and optionally with an appropriate additive such as a thickener to form a diluted slurry for use in coating the rubber. When the diluted slurry is used in conjunction with pellets, it usually has a solids content ranging between 13 and 15 percent by weight and is sprayed on the pellets. Slurry used with slabs is applied by dipping the slabs into the slurry and has a lower solids content such as 3-5 percent by weight.

The present invention contemplates the provision of relatively simple apparatus 10 for mixing the concentrate and water in very accurate proportions, the apparatus operating automatically and with need of very little human supervision. As a result, the danger of producing an improperly formulated slurry is virtually eliminated and, in addition, labor costs are significantly reduced.

The apparatus 10 includes a mixing tank 11 supported within a main box-like frame 12. Concentrate from the large storage tank is supplied to the tank 11 by way of a pipe 13 with the flow being controlled by an air-actuated on/off relay valve 14 in the pipe. The valve 14 is controlled by one of five pilot valves (not visible) in a control panel 15 on the front of the frame 12, each pilot valve being controlled by an electrically actuated solenoid 16 and being supplied with pressurized air via a line 17.

Water is selectively introduced into the tank 11 by means of a pipe 19 with a relay valve 20 which is opened and closed in response to energization and de-energization, respectively, of another one of the solenoids 16. A third pipe 21 with a third relay valve 22 selectively admits additive into the tank when a third solenoid is energized.

A discharge pipe 23 leads from the bottom of the tank 11 to the inlet of a motor-operated pump 24 whose outlet communicates by way of a pipe 25 with a large reservoir 40 (FIG. 4) located in a pit below the apparatus 10. Two relay valves 26 and 26A (FIG. 2) are associated with the discharge line 23 and are controlled by the remaining two solenoids 16. A manually operable drain valve 27 (FIG. 3) is connected into the line 23 upstream of the valves 26 and may be opened for purposes of cleaning the tank.

From a mechanical standpoint, the apparatus 10 is completed by a motor-operated mixer 30, by a digital weighing unit 31 and by an overflow sensor 32. The mixer 30 is located at the center of the tank 11 and serves to blend the concentrate, the additive and the water. The weighing unit or scale 31 underlies the tank and produces an electrical signal (preferably in digital form) which is representative of the instantaneous weight of the materials in the tank. The overflow sensor 32 includes a float-operated switch which, when triggered, causes the valves 26 and 26A to open and the pump 24 to kick in so as to deliver excess slurry to the lower reservoir 40.

In carrying out the invention, a programmable controller 35 is located within the control panel 15 and may be programmed with the desired weights of concentrate, water and additive to be introduced into the tank 11. The controller 35 responds to the instantaneous weight signal from the scale 31 and effects opening and closing of the valves 14, 20 and 22 at appropriate times so as to cause the desired weights of materials to be introduced into the tank.

To explain the operation of the apparatus 10, let it be assumed that the tank 11 is empty and that a particular formulation calls for 2,000 lbs. of water, 10 lbs. of additive and 340 lbs. of concentrate. The operator programs the respective weights into the controller 35 (see FIG. 5) and then actuates a start switch to initiate a cycle. Thereupon, the controller energizes the solenoid 16 associated with the relay valve 20 and thereby opens that valve to start adding water to the tank via the line 19. After a small but predetermined weight of water has been supplied to the tank, the controller responds to the signal from the scale 31 to effect energization of the motor of the mixer 30. After 2,000 lbs. of water have been added to the tank, the controller again responds to the signal from the scale and de-energizes the first solenoid 16 and energizes a second solenoid so as to close and open the valves 20 and 22, respectively. Thus, the flow of water to the tank is cut off while the flow of additive is initiated by way of the pipe 21.

When the signal from the scale 31 indicates that the total weight of the material in the tank 11 is 2,010 lbs., the controller 35 de-energizes the second solenoid 16 and energizes a third solenoid so as to effect closing of the valve 22 and opening of the valve 14. The latter valve remains open and concentrate is added to the tank 11 via the pipe 13 until the scale signals that the total material weight in the tank is 2,400 lbs. The controller 35 then effects de-energization of the third solenoid so as to cause closing of the valve 14. After that valve is closed, the mixer 30 continues to operate for a predetermined period of time (e.g., 2 minutes) and then is shut down by the controller. Thereafter, the controller effects opening of the discharge valve 26.

Referring particularly to FIGS. 4 and 5, if the slurry supply in the reservoir 40 is low, a float 37 in the reservoir transmits a signal to the solenoid 16 for the discharge valve 26A and also to the controller 35 to effect opening of the valve 26A and start-up of the pump 24 and thereby cause slurry to be delivered from the tank 11 to the reservoir 26 via the lines 23 and 25. Usually, the pump delivers between 125-200 lbs. of slurry to the reservoir before the float transmits a signal to stop the pump and close the valve 26A. The remaining slurry then is held in the tank 11 while slurry is discharged through an outlet pipe 38 in the reservoir to the rubber coating operation. When the slurry level in the reservoir drops, the float 37 again transmits a signal to effect re-opening of the valve 26A and re-starting of the pump 24.

The discharge cycle described above is repeated until only a small quantity (e.g., 40 lbs.) of slurry remains in the tank 11. At this time, the scale 31 signals the controller 35 to close the discharge valve 26 and start another mixing cycle, at which time the steps described previously are repeated. If the float 37 calls for slurry while the next batch is being mixed, the closed valve 26 prevents a partially mixed blend from being discharged to the reservoir 40.

From the foregoing, it will be apparent that the present invention brings to the art new and improved apparatus 10 which automatically blends accurate weights of materials to obtain an accurately proportioned blend. Once the apparatus is started, it requires virtually no human supervision other than occasional routine monitoring or unless the proportions of the blend are changed during the course of a work shift. Such change can be effected simply by reprogramming the controller 35 so as to switch

between a very highly diluted mixture for rubber slabs and a less diluted mixture for pellets. The pump 24 may be eliminated and the slurry discharged from the tank 11 by gravity. In such a case, the float 37 need be connected only to the solenoid for the discharge valve 26A and need not be connected to the controller 35.

11. Claims 10, 16, 19, 22, 25, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by VOLK, Jr. et al. (US 5,332,311).

The patent to VOLK, Jr. et al. discloses a mixing process including for producing a fluid mixture of predeterminable mass and/or predeterminable volume by mixing a first fluid (one of ingredients A-E or 64-68 - Fig. 1), held in a first fluid line (one of 24-32 or 70-74 - Fig. 1), and a second fluid (another of the ingredients A-E or 64-68), held in a second fluid line (another of 24-32 or 70-74); the process comprising the steps of causing the first fluid to flow into a third fluid line 22 and/or 112, which is at least intermittently connected to the first fluid line; and causing the second fluid to flow into the third fluid line 22 and/or 112 (denoted by 112 and the broken line/conduit therebelow), which is also at least intermittently connected to the second fluid line, said steps of causing the first and second fluids to flow into the third fluid line being performed alternately and repeated several times; the first and second fluids being joined to form a mixture conducted in the third line 22 and/or 112; line 22 and/or 112 forming a junction (i.e., multiple inlets for fluids being fed into a sole output line 22 and/or 112).

More specifically and for comprehensiveness, the patent to VOLK, Jr. et al. discloses a in FIG. 1, the liquids system 20 of the present invention has at its heart a liquid scale hopper 22 which receives any one or more of liquid ingredients 24-32 as the ingredients are pumped by pumps 34-42 through on/off solenoid valves 44-52. The ingredients 24-32 are identified in FIG. 1 as ingredients A-E and they may be any combination or recipe as required for the particular baking process being performed. For example, in making bread, there will typically be a first liquid system 20 at a sponge dough mixer which adds in soy oil (or canola oil), di-malt and liquid yeast. At a second station, after the sponge dough has been prepared and permitted to rise before being placed in a second mixer, the liquid ingredients would typically include liquid sugar (fructose), honey, refiner's syrup (molasses), vinegar, di-malt, lecithin, and liquid yeast. Of course, these particular ingredients are merely exemplary of other liquid ingredients which could be conveniently utilized using the present invention. Furthermore, as this liquids system 20 is centrally controlled by a main computer 54 or other programmed logic controller, the liquid ingredients 24-32 may be conveniently changed from batch to batch in accordance with the particular recipe for the product being made.

At either side of the top of the liquid scale hopper 22 there is shown chilled water inlets 56, 58 which are supplied from a common water line 60. This common water line 60 carries chilled water produced by a chilled water system 62. The chilled water system 62 includes a cold water source 64, a hot water source 66, and a tap water or city water source 68 which supplies water through an on/off solenoid valve 70-74, with the hot water source 66 and tap water source 68 being further controlled by modulating

valves 76-78. Water from each of these water sources 64-68 is collected into a common water line 80, the flow through which is monitored by a flow valve 82 and the temperature of which is sensed by an electronic temperature sensor 84. As shown in FIG. 1, a second computer 85 senses and controls the various electronic components including valves 70-74, modulating valves 76-78, and temperature sensor 84. The first computer 54 controls the flow of liquid ingredients into the hopper 22 and then calls for chilled water over a data link 87, as required for the dump and flush operation. Flow of chilled water is monitored by first computer 54 by sensing the output of flow meter 82 so as to know when enough chilled water has been delivered.

Computer 85 is programmed to sense the output temperature of the chilled water by electronic temperature sensor 84 which will yield a temperature either above or below the desired water temperature. Cold water from cold water source 64 is generally colder than the desired temperature of the chilled water such that there is no requirement for a modulating valve in its line. Thus, cold water from cold water source 64 is normally either on or off as the chilled water system 62 is either on or off. In order to raise the temperature of the cold water to approach the desired temperature of the chilled water, the modulating valve 78 is throttled open to add city tap water from any potable water source available at the particular installation. The modulating valve 78 is opened up to as much as approximately 80% in an effort to achieve the desired chilled water temperature. If the chilled water temperature is still below desired temperature, then hot water is added from hot water source 66 by throttling open modulating valve 76. For most installations, it has been found that in the summertime the chilled water

temperature of a nominal 40 degrees. F. may be achieved by using the cold water source and the city tap water source. However, in wintertime, it has been found that hot water from hot water source 66 is also required in order to achieve a 40 degrees. F. chilled water temperature.

It should be noted that for the particular baking process being described as the preferred embodiment, the chilled water system is designated as such because water at 40 degrees. F. is being supplied for the baking process. However, it should be understood by those of ordinary skill in the art that different baking processes require water at different temperatures. For example, in some baking processes water at 90 degrees. is required. In those instances, the "chilled" water system disclosed herein could very simply be converted to provide water at the desired temperature by simply rearranging the water sources. For example, one such simplistic arrangement would include swapping the hot water source with the cold water source such that hot water would enter the system at full pressure and flow, tap water would be throttled in as necessary to modulate hot water temperature, and then cold water used to the extent that tap water would not adequately modulate the temperature to the desired value, much as in the manner disclosed herein. Such variations on the present "chilled" water system are within the scope of the disclosure of the present system. Undue emphasis should not be placed on the designation of the water system as "chilled".

Referring now to FIGS. 2 and 3, the liquid scale hopper 22 is secured to a collar 86, collar 86 being suspended by a plurality of support rods 88 attached to load cells 90 which are themselves supported by rods 92 from a supporting framework 94. Load cells

90 provide a continuous indication of the weight of the liquid scale hopper 22 and its contents. A plurality of feed lines 96-104 are individually connected to the top 106 of liquid scale hopper 22 for individually feeding liquid ingredients thereinto, as has been previously explained. Solenoid valves 44-52 control the flow of liquid ingredient through each of the fill lines 96-104. A chilled water supply line 60 feeds chilled water inlets 56, 58 at the opposite sides of top 106 with high flow rate spray nozzles 108, 110. High flow spray nozzles 108, 110 may be Bete Model TF40XW316 and TF40FC316 to accommodate a high flow spray of chilled water against the inside of the liquid scale hopper and across substantially the entire surface of any liquids contained therein. Alternately, high speed spray nozzles 108, 110 may not be required as a great deal of turbulence is created in the hopper when the water is supplied at a high flow rate. Instead, the water inlets 56, 58 may merely be flanged into the top 106 and the end openings be simple pipe ends. As shown in FIG. 2, the bottom of liquid scale hopper 22 funnels into a discharge valve 112 which may be a nominal two inches in diameter to control the dumping of liquid ingredients from liquid scale hopper 22 through delivery tube 114 into a receiver/mixer (not shown) or the like. Each of load cells 90 and the discharge valve 112 is connected to computer 54.

In operation, liquid ingredients as are desired are individually fed into the liquid scale hopper. As each liquid ingredient is fed in, the incremental increase in weight as measured by the load cells help the main computer to determine and control the amount of each ingredient in order to satisfy the desired recipe therefor. Thus, with this arrangement, the individual liquid ingredients may be added by weight to the batch. The

order that the liquid ingredients are fed into the liquid scale hopper may also be controlled to aid in flushing the liquid batch. Generally, the inventors have found that it is easier to flush the liquid batch if the more slippery and less viscous ingredients are first fed into the liquid scale hopper, while the other, stickier, more viscous ingredients are fed last. After the liquid batch has been prepared with the various liquid ingredients, it is held in place for dumping as called for by the main computer logic controller. At that time, the discharge valve is opened and the chilled water supply is turned on to spray chilled water into the liquid scale hopper from opposite sides thereof and across the top of the liquid batch.

The inventors have found that there is a time delay before there is any flow of liquids from the liquid scale hopper during which the chilled water has a tendency to fill the liquid scale hopper. In a typical application, 50-60 lbs. of liquid ingredients are loaded into the liquid scale hopper, and the liquid scale hopper may have a capacity of 180 lbs. which permits approximately 125 lbs. of chilled water to be sprayed into the liquid scale hopper. This spraying action creates quite a lot of turbulence in the hopper which scours out the hopper as it is filled. When the liquid scale hopper reaches its maximum weight as measured by the load cells, the chilled water supply is turned off in order to avoid overfilling. This approximately 125 lbs. of chilled water creates a pressure head through gravitational forces which helps to push the liquid batch through the discharge valve and delivery tube, and into the receiver or mixer. As flow commences through the discharge valve, the inventors have observed that the discharge rate exceeds the chilled water spray rate so that the hopper slowly empties as more chilled

water is added which again scours out the hopper and dilutes the portion of the liquid batch near its top surface. As can be appreciated, this also facilitates the ready flow of the last portion of the liquid batch and helps eliminate any ring of residue around the interior sidewall of the liquid scale hopper and in the delivery tube.

As approximately 400 lbs. of chilled water is utilized in the specific application being discussed herein, after the initial 125 lbs. of chilled water has been loaded into the liquid scale hopper, there remains another 275 lbs. of chilled water which is sprayed thereinto and which helps to not only flush out the remainder of the liquid batch, but also helps to cleanse the inside walls thereof. Thus, not only is the entire batch reliably added to the receiver or mixer, but the interior of the liquid scale hopper and delivery tube is flushed clean so that there is no contamination between batches. This is especially important in those applications where different batches of liquid ingredients are required in order to make up different variations of bakery products. This might be the case in a bakery making bread where different kinds of bread are being made such as whole wheat, white, etc.

It is noted that while the liquid ingredients comprising the liquid batch are measured by weight into the liquid scale hopper, the chilled water is measured by flow (volume) which helps to reduce the required size of the liquid scale hopper as the liquid scale hopper need not be of sufficient capacity to hold all of the chilled water in addition to the liquid ingredients comprising the liquid batch.

12. Claims 10, 16, 19, 22, 25, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 7-198554.

JP 7-198554 discloses per the abstract a mixing process including for producing a fluid mixture of predeterminable mass and/or predeterminable volume by mixing a first fluid 1, held in a first fluid line 5, and a second fluid 1', held in a second fluid line 5'; the process comprising the steps of causing the first fluid to flow into a third fluid line 3, which is at least intermittently connected to the first fluid line; and causing the second fluid to flow into the third fluid line 3, which is also at least intermittently connected to the second fluid line, said steps of causing the first and second fluids to flow into the third fluid line being performed alternately (see the abstract) and inherently repeated several times (e.g., for subsequent batches of mixtures); the first and second fluids being joined to form a mixture conducted in the third line 3; line 3 forming a junction at point 15 (i.e., the multiple inlets for fluids being fed into a sole output line 3).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over MOSS, MACKEY, VOLK, Jr. et al., or JP 7-198554 in view of WILMER et al. (US 6,923,568 B2).

MOSS, MACKEY, VOLK, Jr. et al., or JP 7-198554 disclose the recited subject matter substantially as claimed as explained above but do not disclose the steps of measuring volumetric or mass flow rate in at one or two of the three fluid lines or measuring a fluid density in at least one of the three fluid lines. WILMER et al. (US 6,923,568 B2) discloses a process for producing a mixture and teaches steps of measuring volumetric or mass flow rate in one or more fluid lines and measuring a fluid density in one of more fluid lines at col. 6, lines 47-64:

> For monitoring a slurry in a semiconductor process, an instrument for continuously measuring mass density (herein after all densities refer to mass density unless specifically indicated otherwise), such as densitometer 5, may be preferred. Measuring density is one manner of tracking concentration. For example, in slurries, the density is related to the amount of inert, non-volatile solids per unit volume. Accordingly, by measuring volumetric flow rate per unit time, for example with a flow meter, and density, the amount of inert solids delivered to a blend of process materials may be monitored. Monitoring density may also be a preferred for a slurry in a semiconductor process because density measuring instruments may produce less agglomeration than other instruments providing similar feedback because they may not introduce the same shear stresses in the slurry. A sufficiently accurate mass flow meter that does not produce unacceptable agglomeration or a percent solids sensor also may be used for this purpose.

and further teaches at col. 14, line 29 through col. 15, line 4:

> Where one of the process materials is maintained at a constant volumetric flow rate, a sensor 92 providing data allowing the volumetric flow rate to be converted to a mass flow rate may be included on material supply line 18. Sensor 92 may measure density or a property that may correlated to density, such as temperature. For example, a controller 91 may receive a signal from sensor 92 representing a density of the process material and may calculate a mass flow rate of process material based upon this signal and the known volumetric flow.
>
> Controller 91 may also receive signals from a sensor 93 associated with the material supply line through which the volumetric flow rate varies. As with sensor 92, sensor 93 may provide a signal that represents a property that may allow the mass flow in the material supply line to be calculated based on a volumetric flow. As the volumetric

flow rate of process material may vary, controller 91 may also receive a signal from a volumetric flow meter 94, allowing the mass flow rate to be calculated. Based upon the mass flow rate in the material supply line, controller 91 may control a valve 21 to provide a mass flow rate that, with the mass flow rate of process material in the other material supply line, provides a desired blend of process materials.

In an alternate embodiment, for example as illustrated in FIG. 10, sensor 93 and volumetric flow meter 94 may be eliminated by providing a sensor 96 downstream of static mixer 22 able to verify that the blended process material is acceptable. For example, where a slurry and DI water are blended, a densitometer, percent solids sensor, or the like may be used to verify that the blended process material is acceptable. Sensor 96 may provide a signal to controller 91 representing the condition of the blended process material. If necessary, controller 91 may adjust the flow rate of one of process materials with valve 21 until a signal representing a set point is achieved from sensor 96. For example, where the process materials are a slurry and DI water the density of the desired slurry/DI water blend may be the set point. If this density is detected to be too low, more slurry may be added and, if it is detected to be too high, the amount of slurry being added may be reduced. In some embodiments, several sensors 96, of different or similar types, may provide signals to the controller representing conditions of the blended process materials.

Accordingly, It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was made, to have provided the processes of MOSS, MACKEY, VOLK, Jr. et al., or JP 7-198554 with steps of measuring volumetric or mass flow rate in one or more of the three fluid lines or measuring a fluid density in at least one of the three fluid lines as taught by WILMER et al. for the purposes of monitoring the mixing process and the mixture(s) produced thereby to thus produce a desired blend of materials from the fluid lines.

15. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over MOSS, MACKEY, VOLK, Jr. et al., or JP 7-198554 in view of LINSEN et al. (US 2003/0198125 A1).

MOSS, MACKEY, VOLK, Jr. et al., or JP 7-198554 disclose the recited subject matter substantially as claimed as explained above but do not disclose the steps of

measuring fluid viscosity in at least one of the three fluid lines. LINSEN et al. (US 2003/0198125 A1 discloses a process for producing a mixture and teaches a step of measuring viscosity via sensor 58 in fluid receptacle 46. It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was made, to have provided the processes of MOSS, MACKEY, VOLK, Jr. et al., or JP 7-198554 with a step of measuring viscosity in at least one of the three fluid lines as taught by LINSEN et al. for the purposes of monitoring the viscosity of the materials being mixed and to control the mixing process as a result of the sensed viscosity to bring the viscosity value into a desired range (see paragraphs [0029] and [0033]).

16. Claims 14-15, 25, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over MOSS, MACKEY, VOLK, Jr. et al., or JP 7-198554 in view of WILMER et al. (US 6,923,568 B2).

MOSS, MACKEY, VOLK, Jr. et al., or JP 7-198554 disclose the recited subject matter substantially as claimed as explained above but do not disclose the steps of measuring volumetric or mass flow rate in at one or two of the three fluid lines or measuring a fluid density in at least one of the three fluid lines. WILMER et al. (US 6,923,568 B2) discloses a process for producing a mixture and teaches steps of measuring volumetric or mass flow rate in one or more fluid lines and measuring a fluid density in one of more fluid lines at col. 6, lines 47-64:

> For monitoring a slurry in a semiconductor process, an instrument for continuously measuring mass density (herein after all densities refer to mass density unless specifically indicated otherwise), such as densitometer 5, may be preferred. Measuring density is one manner of tracking concentration. For example, in slurries, the density is related to the amount of inert, non-volatile solids per unit volume. Accordingly,

> by measuring volumetric flow rate per unit time, for example with a flow meter, and density, the amount of inert solids delivered to a blend of process materials may be monitored. Monitoring density may also be a preferred for a slurry in a semiconductor process because density measuring instruments may produce less agglomeration than other instruments providing similar feedback because they may not introduce the same shear stresses in the slurry. A sufficiently accurate mass flow meter that does not produce unacceptable agglomeration or a percent solids sensor also may be used for this purpose.

and further teaches at col. 14, line 29 through col. 15, line 4:

> Where one of the process materials is maintained at a constant volumetric flow rate, a sensor 92 providing data allowing the volumetric flow rate to be converted to a mass flow rate may be included on material supply line 18. Sensor 92 may measure density or a property that may correlated to density, such as temperature. For example, a controller 91 may receive a signal from sensor 92 representing a density of the process material and may calculate a mass flow rate of process material based upon this signal and the known volumetric flow.
>
> Controller 91 may also receive signals from a sensor 93 associated with the material supply line through which the volumetric flow rate varies. As with sensor 92, sensor 93 may provide a signal that represents a property that may allow the mass flow in the material supply line to be calculated based on a volumetric flow. As the volumetric flow rate of process material may vary, controller 91 may also receive a signal from a volumetric flow meter 94, allowing the mass flow rate to be calculated. Based upon the mass flow rate in the material supply line, controller 91 may control a valve 21 to provide a mass flow rate that, with the mass flow rate of process material in the other material supply line, provides a desired blend of process materials.
>
> In an alternate embodiment, for example as illustrated in FIG. 10, sensor 93 and volumetric flow meter 94 may be eliminated by providing a sensor 96 downstream of static mixer 22 able to verify that the blended process material is acceptable. For example, where a slurry and DI water are blended, a densitometer, percent solids sensor, or the like may be used to verify that the blended process material is acceptable. Sensor 96 may provide a signal to controller 91 representing the condition of the blended process material. If necessary, controller 91 may adjust the flow rate of one of process materials with valve 21 until a signal representing a set point is achieved from sensor 96. For example, where the process materials are a slurry and DI water the density of the desired slurry/DI water blend may be the set point. If this density is detected to be too low, more slurry may be added and, if it is detected to be too high, the amount of slurry being added may be reduced. In some embodiments, several sensors 96, of different or similar types, may provide signals to the controller representing conditions of the blended process materials.

Accordingly, It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was made, to have provided the processes of MOSS, MACKEY, VOLK, Jr. et al., or JP 7-198554 with steps of measuring volumetric or mass

flow rate in one or more of the three fluid lines or measuring a fluid density in at least one of the three fluid lines as taught by WILMER et al. for the purposes of monitoring the mixing process and the mixture(s) produced thereby to thus produce a desired blend of materials from the fluid lines.

Response to Amendment

17. Applicant's arguments filed 22 FEB 2006 have been fully considered but they are not deemed to be persuasive.

Applicant is reminded that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Turning to the rejection of the claims under 35 U.S.C. § 102(b), it is noted that the terminology in a pending application's claims is to be given its broadest reasonable interpretation (*In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)) and limitations from a pending application's specification will not be read into the claims (*Sjolund v. Musland*, 847 F.2d 1573, 1581-82, 6 USPQ2d 2020, 2027 (Fed. Cir. 1988)).

Anticipation under 35 U.S.C. § 102(b) is established only when a single prior art reference discloses, either expressly or under the principles of inherency, each and every element of a claimed invention. *See Constant v. Advanced Micro-Devices. Inc.*, 848 F.2d 1560, 1570, 7 USPQ2d 1057, 1064 (Fed. Cir.), cert. denied, 488 U.S. 892 (1988); *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). Moreover, anticipation by a prior art reference does not require either the inventive concept of the claimed subject matter or the recognition of properties that are inherently possessed by the prior art reference. *Verdegaal Brothers Inc. v. Union Oil co. of California*, 814 F.2d 628, 633, 2 USPQ2d 1051, 1054 (Fed. Cir. 1987), cert. denied, 484 U.S. 827 (1987). A prior art reference anticipates the subject matter of a claim when that reference discloses each and every element set forth in the claim (*In re Paulsen*, 30 F.3d 1475, 1478-79, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994) and *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990)); however, the law of anticipation does not require that the reference teach what Applicant is claiming, but only that the claims "read on" something disclosed in the reference. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984) (and overruled in part on another issue), *SRI Intel v. Matsushita Elec. Corp. Of Am.*, 775 F.2d 1107, 1118, 227 USPQ 577, 583 (Fed. Cir. 1985). Also, a reference anticipates a claim if it discloses the claimed invention such that a skilled artisan could take its teachings in combination with his own knowledge of the particular art and be in possession of the invention. See *In re Graves*, 69 F.3d 1147, 1152, 36 USPQ2d 1697, 1701 (Fed. Cir. 1995), cert. denied, 116

S.Ct. 1362 (1996), quoting from *In re LeGrice*, 301 F.2d 929, 936, 133 USPQ 365, 372 (CCPA 1962).

With regard to Moss, the fluid flows from each of the lines 15, 16, and 17 alternately and the fluids each ultimately flow through output line 14D, 19. Applicant states "the flows are into a measuring chamber 14 not into the line 14". However, if this is a factual statement, the examiner wonders where the fluid flows from lines 15, 16, and 17 ultimately terminate.

With regard to Mackey et al. and Volk, Jr. et al., Applicant asserts the flows are not directed into third line but into a mixer and a hopper. In Mackey, the fluid flows from each of the "IN" lines alternately and the fluids each ultimately flow through output line 11 and/or 25. In Volk, Jr. et al., the fluid flows from a multitude of the input lines 24-32 or 70-74 alternately and the fluids each ultimately flow through output line 22 and/or 112.

While element 14 in Moss, element 11 in Mackey et al., and element 22 in Volk, Jr. et al. may indeed be containers, said containers can be deemed equivalent to the broadly recited "third line" (pursuant to *In re Zletz, supra)* since such containers are elements suitable for holding and conveying fluids. Nevertheless, element 14D in Moss, element 25 in Mackey et al., and element 112 in Volk Jr., et al. are indeed third lines or conduits which function to contain and convey the inputted fluids further downstream. The examiner is a bit mystified at this discussion focused on the third line since the examiner notes that, although apparently not a point of novelty in the instant disclosure,

the claims are utterly silent with regard to any particular structure, size, shape, etc. of the third line.

With regard to JP 7-198554, element 3 is clearly a third line (e.g., see line 3 in Fig. 4 that is downstream form junction point 15). Note the abstract refers to element 3 as "a common pipe passage" that is fed fluids from containers 1 and 1'.

Applicant concludes that "[n]one of the references of record disclose a fluid mixing system with first and second fluid lines alternately connected to a third fluid line for conducting a fluid mixture produced from first and second fluids conducted in the first and second fluid lines, respectively." However, the examiner disagrees, as this is the manner in which the applied prior art references function. The examiner sees absolutely no differences between the applied prior art and the very broadly recited mixing process steps.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL

EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION. ANY RESPONSE FILED AFTER THE MAILING DATE OF THIS FINAL REJECTION WILL BE SUBJECT TO THE PROVISIONS OF MPEP 714.12 AND 714.13.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles E. Cooley whose telephone number is (571) 272-1139. The examiner can normally be reached on Mon-Fri. All official facsimiles should be transmitted to the centralized fax receiving number 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles E. Cooley
Primary Examiner
Art Unit 1723

13 May 2006